

REMARKS

Claims 1-19, 25, 27, 29-37, 39-45, and 47 are pending. Claims 26, 28, 38, 46 and 48-50 are canceled with this reply.

Claim Objections

Claims 17, 28 and 38 have been objected to for being in improper dependent form. Claim 17 has been amended; claims 28 and 38 have been canceled. Applicants respectfully request that the objection be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 2, 17, 26, 28, 38, 40, 45-46 and 49-50 have been rejected under 35 U.S.C. § 112, second paragraph, for being indefinite. See the Office Action at pages 2-3.

In response, claims 2, 17, 40, and 45 are amended to provide proper antecedent basis to all terms in each claim. Claims 26, 28, 38, 46, and 49-50 are canceled. Claim 41 is also amended with this reply. Applicants believe that all pending claims comply with 35 U.S.C. § 112, second paragraph. Reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 102

Stapleton

Claims 1-2, 8-12, 14-15, 18-19, 25-30, 34-35, and 39-50 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,922,604 to Stapleton et al. ("Stapleton"). Claims 1, 25, 44, and 48 are independent. Claim 1 relates to a device having a continuous cavity that forms a single reaction chamber that is adapted to amplify **and** characterize nucleic acids therein.

Claim 25 relates to a device having a continuous cavity that is adapted to act as a single chamber for **both** reaction and characterization of nucleic acids.

Claim 44 relates to a device having continuous cavity that consists of a single chamber for **both** reaction and characterization of nucleic acids such that only the single chamber holds the nucleic acids for both reaction and characterization.

Each of independent claims 1, 25 and 44 relates to a device having a single reaction chamber. The single reaction chamber is either adapted to amplify **and** characterize nucleic acids therein (claim 1) or for **both** reaction and characterization of nucleic acids (claims 25 and 44).

The Examiner argues with respect to claims 1, 25, and 44, that Stapleton teaches a device having "a continuous cavity [that] forms a single reaction chamber adapted to amplify and characterize nucleic acids therein (Column 10, line 1-27 and Column 14, lines 40-57)." See the Office Action at pages 4, 5 and 7. Applicants respectfully disagree.

Stapleton relates generally to thin reaction chambers for containing and handling microvolumes (Title). Stapleton discusses design features for limiting bubble formation during thermocycling (col. 10, lines 1-27). Elsewhere, in a different context, Stapleton indicates that the device can include an array. Stapleton notes that "the device is capable of processing samples with different liquid treatments such as needed for labeling and hybridizing nucleic acid samples." (col. 14, lines 50-52). However, Stapleton never indicates or even hints that the two different functions--thermocycling and hybridizing--can be performed in **a single reaction chamber**. In other words, Stapleton doesn't teach a device that includes all of the claimed limitations, most particularly, a **single** reaction chamber that is adapted to amplify **and** characterize nucleic acids therein (as in claim 1), or a **single** chamber for **both** reaction and characterization of nucleic acids (as in claims 25 and 44). In fact, Stapleton indicates that in those instances when both functions may be performed, they are spatially separated:

The device of the invention has working areas coated with reactants and therefore is suitable for preparing a microsample of a few specimen cells, amplifying, releasing or labeling targets nucleic acid sequences of the specimen to hybridize with **an oligo probe array on another coated working area**, for visual or instrumented detection.

(emphasis added) (col. 14, lines 58-63). Stapleton's array is not in the same reaction chamber where amplifying occurs.

For at least these reasons, claims 1, 25, 44, and 48, and claims that depend therefrom, are patentable over Stapleton. Reconsideration and withdrawal of this rejection is respectfully requested.

Besemer

Claims 1-5, 8-10, 12-15, 17-19, 25-30, 34-36, 38-45, and 47-50 have been rejected as being anticipated under 35 U.S.C. § 102(b) by WO 95/33846 to Besemer et al. ("Besemer"). See the Office Action at page 8-12.

Besemer relates to "packaging devices for a substrate having an array of probes fabricated thereon." (page 5, lines 37-39). The Examiner argues that Besemer teaches "a continuous cavity [that] forms a single reaction chamber adapted to amplify and characterize nucleic acids therein (Abstract)." See the Office Action at page 8.

The Examiner indicates only the Abstract of Besemer as teaching that the single reaction chamber is adapted to amplify and characterize nucleic acids therein. Applicants respectfully disagree that Besemer teaches amplification of nucleic acids. The Abstract of Besemer describes

[a] body (2700) having a cavity (2710) for mounting a substrate (2790) fabricated with probe sequences (2795) at known locations The cavity (2710) includes inlets (2750 and 2751) for introducing selected fluids into the cavity (2710) to contact the probes (2795).

At 20-21, Besemer describes how the chip package "will be useful in sequencing genetic material by hybridization," but nowhere suggests that the chip package is suitable for amplification of nucleic acids. Neither the Abstract, nor any other portion of Besemer, teaches that the device has a single reaction chamber adapted to **amplify and characterize** nucleic acids therein.

Because the device in Besemer lacks a single reaction chamber adapted to **amplify and characterize** nucleic acids, claims 1-5, 8-10, 12-15, 17-19, 25-30, 34-36, 38-45, and 47-50 are patentable over Besemer. Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

Rejections under 35 U.S.C. § 103(a)

McBride

Claims 6 and 7 have been rejected under 35 U.S.C. § 103(a) as being obvious over Besemer or Stapleton in view of U.S. Patent No. 6,296,752 to McBride et al. ("McBride"). See the Office Action at pages 16-17. Claims 6 and 7 depend from claim 1. Applicants respectfully disagree.

As discussed above, neither Besemer nor Stapleton teaches all the limitations of claim 1 (from which claims 6 and 7 depend). McBride does not remedy this defect. The combination of Besemer or Stapleton with McBride does not teach, suggest or motivate a person skilled in the art to make the devices of claims 6 and 7. For at least these reasons, Applicants request that the Examiner reconsider and withdraw this rejection.

Atwood

Claim 11 has been rejected under 35 U.S.C. § 103(a) as being obvious over Besemer in view of U.S. Patent No. 5,475,610 to Atwood et al. ("Atwood"). See the Office Action at page 17. Claim 11 depends from claim 1. Applicants respectfully disagree.

As discussed above, Besemer does not teach all the limitations of claim 1 (from which claim 11 depends). Atwood does not remedy this defect. The combination of Besemer with Atwood does not teach, suggest or motivate a person skilled in the art to make the device of claim 11. For at least these reasons, Applicants request that the Examiner reconsider and withdraw the rejection over Besemer in view of Atwood.

Fodor

Claims 16, 17, 37 and 38 have been rejected under 35 U.S.C. § 103(a) as being obvious over Besemer or Stapleton in view of U.S. Patent No. 5,744,101 to Fodor et al. ("Fodor"). See the Office Action at pages 17-18. Claims 16, 17, 37 and 38 depend from claim 1. Applicants respectfully disagree.

As discussed above, neither Besemer nor Stapleton teaches all the limitations of claim 1 (from which claims 16, 17, 37 and 38 depend). Fodor does not remedy this defect. The combination of Besemer or Stapleton with Fodor does not teach, suggest or motivate a person skilled in the art to make the devices of claim 16, 17, 37 or 38. For at least these reasons,

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Page : 12 of 12

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Applicants request that the Examiner reconsider and withdraw the rejection over Besemer or Stapleton in view of Fodor.

CONCLUSION

Applicants ask that all claims be allowed. Please apply any charges or credits to deposit account 19-4293.

Respectfully submitted,

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